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10/574,152

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EXAMINER

UHLENHAKE, JASON S

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | | |
|------------------------------|--------------------------------------|--|--|
| Office Action Summary | Application No. 10/574,152 | Applicant(s) USHINOHAMA ET AL. | |
| | Examiner JASON S. UHLENHAK | Art Unit 2853 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 December 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>9/30/2009</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eguchi (JP 2002-240287 A).

Eguchi discloses:

- ***regarding claims 1, 4***, a liquid emitting apparatus and a method for a liquid emitting apparatus including a plurality of liquid chambers for storing liquid arrayed in a line print head wherein each liquid chamber includes two or more pressure generating liquid elements provided in the liquid chamber for pressurizing the liquid stored in the liquid chamber (Figure 1; Abstract), an emitting port for emitting the liquid pressurized by the pressure generating elements in the form of liquid droplets, an emission control circuit for varying a current value supplied to at least one of the pressure generating elements relative to one of the other pressure generating elements to thereby control an angle of emission of the liquid droplets from the emitting ports; wherein (Figures 3-4; Paragraphs 0039-0040)
- with a non-zero current supplied to one of the pressure generating elements as a reference current, the emission control circuit supplies the current substantially equal to the reference current or the current having a current value

Art Unit: 2853

difference less than $\pm 10\%$ from the reference current, to one or more of the pressure generating elements other than the pressure generating element supplied with the reference current (Paragraphs 0039-0043). A current value difference less than $\pm 10\%$ from the reference current includes the value 0, therefore as shown in Figure 3c and Paragraph 0042 Eguchi discloses a current value difference less than $\pm 10\%$ from the reference current.

- further comprising circuitry for limiting a current value difference to less than 10% for ejecting element when no ejection variation is intended. Figure 3c discloses when no ejection variation is intended the current values are equal ($P_a = P_b$), therefore the circuitry limits the difference to less than 10% for ejection (Figure 3c; Paragraph 0042)

- **regarding claims 2, 5**, wherein the emission controlling means supplies the current having a current value difference less than $\pm 8\%$ with respect to the reference current to the pressure generating element or elements other than the pressure generating element supplied with the reference current. A current value difference less than $\pm 8\%$ from the reference current includes the value 0, therefore as shown in Figure 3c and Paragraph 0042 Eguchi discloses a current value difference less than $\pm 8\%$ from the reference current.

- **regarding claims 3, 6**, wherein the emitting ports of the emitting means are arranged side-by-side in a line (Claim 2; Paragraph 0021)

Eguchi does not expressly disclose:

- **regarding claims 1, 4**, wherein none of the liquid chambers in the line print head has a pressure generating element that receives a current having a current value difference that is greater than 10% from the corresponding reference current

Eguchi discloses the claimed invention except for wherein none of the liquid chambers in the line print head has a pressure generating element that receives a current having a current value difference that is greater than 10% from the corresponding reference current. It would have been obvious to one having ordinary skill in the art at the time the invention was made wherein none of the liquid chambers in the line print head has a pressure generating element that receives a current having a current value difference that is greater than 10% from the corresponding reference current, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233

At the time the invention was made it would have been obvious to a person of ordinary skill in the art to incorporate an optimum value range and to adjust the current value to any value to produce a droplet at the desired angle and produce an image with high quality.

Claims 7-8, 9-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eguchi (JP 2002-240287 A) in view of Norton (U.S. Pat. 6,439,678)

Eguchi discloses:

- ***regarding claims 9, 10***, wherein the current value and substantially equal current applied to the one or more of the pressure generating elements other than the pressure generating element supplied with the reference current is varied relative to the variation of the resistance of the variable resistance element (Paragraphs 0040-0042)

Eguchi does not disclose expressly the following:

- ***regarding claims 7, 8***, wherein the emission control circuit is comprised of one or more switches and a variable resistance element

Norton discloses:

- ***regarding claims 7, 8***, wherein the emission control circuit is comprises of one or more switches and a variable resistance element (Abstract)

At the time the invention was made it would have been obvious to a person of ordinary skill in the art to incorporate the teaching of Norton into the device of Eguchi, for the purpose of controlling firing energy in an inkjet printer

Claims 11-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eguchi (JP 2002-240287 A) as modified by Norton (U.S. Pat. 6,439,678) as applied to claims 1, 4 above, and further in view of Takenaka et al (U.S. Pub. 2005/0057599).

Eguchi as modified by Norton does not disclose expressly the following:

- **regarding claims 11, 12**, wherein the emission control circuit is comprised of the variable resistance element connected to a first terminal of each of the pressure generating elements via a first switch, and the variable resistance element is selectively connected to a first potential power source and a second potential power source different from the first via a second switch

- **regarding claims 13, 14**, wherein the pressure generating element supplied with a non-zero reference current has a second terminal thereof connected to a third potential power source, and each of the one or more pressure generating elements other than the pressure generating element supplied with the reference current has a second terminal thereof selectively connect e to a fourth potential power source via one of more third switches

- **regarding claim 15-16**, wherein the first and fourth potential power sources are a ground level

- **regarding claims 17-18**, wherein the first and second switches are respectively controlled via first and second switch control circuits, and the first control circuit causing the variable resistance element to be connected to and disconnected from he pressure generating elements, and the second control circuit determining whether the variable resistance element is connected to the first or said the second potential power source

Takenaka discloses:

- **regarding claims 11, 12**, wherein the emission control circuit is comprised of the variable resistance element connected to a first terminal of each of the

pressure generating elements via a first switch, and the variable resistance element is selectively connected to a first potential power source and a second potential power source different from the first via a second switch (Figure 18)

- **regarding claims 13, 14**, wherein the pressure generating element supplied with a non-zero reference current has a second terminal thereof connected to a third potential power source, and each of the one or more pressure generating elements other than the pressure generating element supplied with the reference current has a second terminal thereof selectively connect e to a fourth potential power source via one of more third switches (Figure 18)

- **regarding claim 15-16**, wherein the first and fourth potential power sources are a ground level (Figure 18)

- **regarding claims 17-18**, wherein the first and second switches are respectively controlled via first and second switch control circuits, and the first control circuit causing the variable resistance element to be connected to and disconnected from he pressure generating elements, and the second control circuit determining whether the variable resistance element is connected to the first or said the second potential power source (Figure 18)

At the time the invention was made it would have been obvious to a person of ordinary skill in the art to incorporate the teaching of Takenaka into the device of Eguchi as modified by Norton, for the purpose of controlling the discharge direction of a droplet

Response to Arguments

Applicant's arguments with respect to claims 1-18 have been considered but are moot in view of the new ground(s) of rejection. Please see the rejection above regarding Eguchi (JP 2002-240287 A).

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JASON S. UHLENHAKKE whose telephone number is (571)272-5916. The examiner can normally be reached on Monday-Friday 8:00-5:00.

Art Unit: 2853

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Meier can be reached on (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/JASON S UHLENHAKE/
Examiner, Art Unit 2853
May 7, 2010

/Julian D. Huffman/
Primary Examiner, Art Unit 2853